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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,755	02/24/2004	James Ibbetson	P0285US-7	2851

23935 7590 06/22/2011

KOPPEL, PATRICK, HEYBL & PHILPOTT
2815 Townsgate Road
SUITE 215
Westlake Village, CA 91361-5827

EXAMINER	
PERRY, ANTHONY T	

ART UNIT	PAPER NUMBER
2879	

MAIL DATE	DELIVERY MODE
06/22/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/786,755	IBBETSON ET AL.	
	Examiner	Art Unit	
	ANTHONY PERRY	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 December 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-21,23,24 and 27-67* is/are pending in the application.

4a) Of the above claim(s) *50-56* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-21,23,24,27-49 and 57-67* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/14/11,10/15/10*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Newly submitted claims 50-56 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the claims relate to the species shown Figure 11, which requires a conversion material layer to be located on a first surface and a second surface of the submount, while the other species locate the conversion material layer only on one of a first and second surface of the submount depending on whether the submount is cup-shaped or is flat.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 50-56 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

There is a search and/or examination burden for the patentably distinct species as set forth above because at least the following reason(s) apply: the species or groupings of patentably indistinct species require a different field of search (e.g., searching different classes /subclasses or electronic resources, or employing different search strategies or search queries).

Should applicant traverse on the ground that the species, or groupings of patentably indistinct species from which election is required, are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing them to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 10, 11, 30, 31, 40, 41, 42, 43, 47, 48, 66, and 67 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 10, 11, 42, 43, 47, and 48, the claims include the limitations of a hemispheric conversion material region comprising a phosphor loaded cap perforated to allow said first contact to be housed within said phosphor loaded cap. There is not an embodiment described in the originally filed application that includes a perforation to allow the first contact to be housed within the phosphor loaded cap that also includes a hemispherical conversion material region (for example, see figures 15-16). Likewise, none of the embodiments including a substantially hemispheric conversion material region comprise a phosphor loaded cap with a perforation (see Figs. 1-12).

Regarding claims 30, 31, 66, and 67, the claims include the limitations of a conversion material region having an inside surface that is substantially the same shape as a plurality of the outside surfaces of the light source and has a space between the light source and the conversion

material region. There is not an embodiment described in the originally filed application that includes a space between the conversion material region, wherein the conversion material region has an inside surface that is substantially the same shape as a plurality of outside surfaces of the light source (for example, see figures 3-12). Likewise, none of the embodiments including an inside shape of the conversion material region substantially the same as a plurality of outside surfaces of the light source has a space located between the light source and the conversion material region (see Figs. 13-16).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18-21, 23-24, 27-31, 49, and 57-67 are rejected under 35 U.S.C. 102(b) as being anticipated by Odaki et al. (US 2001/0050371).

Regarding claims 18, 49, and 57, Fig. 1B of Odaki et al. teach an emitter, comprising: a light source which emits a first spectrum of light, said light source comprising first (not labeled, but shown has hemispheric contact on top of light emitting element (1)) and second (3) electrical contacts on opposite surfaces of said light source; and (1) which emits a first spectrum of light; and a conversion material region (2') having an inside surface that is substantially the same shape as a plurality of outside surfaces of said light source, said conversion material region comprising a phosphor loaded cap (2') perforated to allow said first contact (not labeled, but shown has hemispheric contact on the top outer surface of the light emitting element (1)) to be housed within said phosphor loaded cap/film (2'), said phosphor loaded cap comprising a top

perforation, said first contact (not labeled, but shown has hemispheric contact on top of light emitting element (1)) is inherently accessible (a wire (not shown in Fig. 1b, but shown in other figures) must be connected to the top contact in order for the device to be operable) through the top perforation (portion surrounding the hemispheric contact) said conversion material region formed separately (paragraph 48 states that the cap 2' is formed by adhering the "film"(pre-made) to the light emitting element, as opposed to coating the resin directly on the LED (shown in Fig. 1A) from said light source and positioned on said light source, said conversion material region (2') arranged to absorb at least some of the light emitted by said light source and re-emit light at a second spectrum of light, said emitter emitting a combination of said first and second spectrums of light in a uniform third spectrum of light (for example, see Fig. 1B and paragraphs 48, 56, and 60-61).

Regarding claims 19 and 58, the conversion material region is separable from said position on said light source (1) (for example, see paragraph 58).

Regarding claims 20 and 59, the emitter further comprises a submount (3), wherein said light source is positioned on a first surface of said submount (3) (see Fig. 1B).

Regarding claims 21 and 60, the submount (3) is configured to reflect some of said first and second spectrums of light (see Fig. 1B).

Regarding claims 23 and 61, at least one of said submount (3) surface reflects some of the first and second spectrums of light to said conversion material region (2') (see Fig. 1B).

Regarding claims 24 and 62, submount (3) includes one of a cup-shaped submount and a flat submount (see Fig. 1B).

Regarding claims 27 and 63, the conversion material region (2') comprises a phosphor loaded cap having substantially the same thickness throughout (for example, see Fig. 1B and paragraph 61).

Regarding claims 28 and 64, the phosphor loaded cap (4) is shaped to fit the shape of said light source (1) (for example, see Fig. 1B).

Regarding claims 29 and 65, the phosphor loaded cap (21) is formed separately from said light source and bonded to said light source (1) (see Fig.1B).

Regarding claims 30 and 66, the conversion material region (2') is positioned in relation to said light source such that there is a space between the two, said space chosen to obtain substantially uniform emission of said third spectrum of light (for example, see Fig. 1B and paragraph 45).

Regarding claims 31 and 67, the conversion material region is positioned in relation to said light source such that there is a space between the two, said space chosen to provide said third spectrum of light with at least one of a desired color and intensity (for example, see paragraph 45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 5-17, 32-39, and 44-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reeh et al. (US 2001/0000622) in view of Komoto et al. (US 6,674,097).

Regarding claim 1, Reeh et al. disclose an emitter, comprising: a light source (1) which emits a first spectrum of light; Rhee seems to suggest a hemispheric shaped conversion material region (4+29) (for example, see pargraphs 91 and 94) formed separately from said light source (1) and including conversion particles seemingly suggested to be distributed uniformly throughout said conversion material region (4) (for example, see paragraph 25, which recites that it is possible to configure the conversion particles by means of an inhomogeneous particle distribution… the fact that it recites it is possible, and not required, seems to suggest that Rhee teaches the particles being homogenously distributed (uniformly distributed) throughout the conversion material region), positioned in proximity to said light source (1) such that at least some of said light source light passes through said conversion material region, said conversion material region shaped such that said light passing through travels through substantially similar thicknesses of said conversion material region, said conversion particles absorbing at least some of said light source light passing through said conversion material region and emitting a second spectrum of light, wherein said first spectrum of light and said second spectrum of light are combined within said conversion material region, said emitter emitting a combination of said first and second spectrums at a substantially uniform color and intensity (for example, see Fig. 3 and paragraphs 24-25, 53, 90, and 91).

As noted, above, Rhee seems to suggest that the conversion material region is uniformly distributed throughout the hemispheric conversion material region (4+29), but does not explicitly recite such conditions exist. Komoto et al. teach that several different distributions of the conversion particles can be used to produce uniform luminous light including a uniform distribution in a hemispheric conversion material region, a inhomogeneous distribution in a hemispheric conversion material region, and a conversion material coating having a uniform

thickness located on the outside of a hemispheric transparent resin (for example, see Figs. 30A-30C). Komoto et al. teach that any of the configurations are suitable for providing a uniform luminous light (for example, see col. 24, line 12 - col. 25, line 7 and col. 25, lines 53-67). Komoto et al. teach that the uniform distribution of particles within the conversion material region provides a uniform luminous light, the uniformly distributed particles not only convert a portion of the first spectrum of light, but also act as a light scattering material (for example, see col. 24, line 62 – col. 25, line 3). Rhee et al. also mention the conversion particles acting as light scattering material uniformly mixing the first spectrum of light with the second spectrum light, such that the radiation radiated by the light source is efficiently attenuated. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably contemplate providing a uniform distribution of conversion particles within a hemispheric conversion material region since both references suggest that a inhomogeneous distribution is not needed to compensate for the light path, since the conversion particles act as scattering particles that efficiently attenuate the light, and since it easier to form than the conversion material having an inhomogeneous distribution to compensate for different light path lengths, and has increased integrity compared to the coating located on the outside of the lens, since the conversion particles are embedded within the resin layer.

Regarding claim 2, the light source (1) emits said first spectrum of light along a plurality of light paths extending through said conversion material region (4), each light path extending through a substantially equal amount of conversion particles (for example, see paragraphs 24-25).

Regarding claim 5, the conversion material region includes scattering particles which redirect at least some of said first and second spectrum of light (for example, see paragraphs 54-55).

Regarding claim 6, Reeh et al. teach the conversion material region (4) comprises a glass lens (29) (for example, see Fig. 3 along with paragraph 91).

Regarding claim 7, the glass lens is formed separately from said light source and bonded proximate to said light source (1) (for example, see paragraph 91).

Regarding claim 8, the conversion material region (4) comprises a phosphor loaded cap (17) (for example, see paragraph 93).

Regarding claim 9, Reeh et al. disclose a phosphor loaded cap (6) shaped to fit closely over one or more of the surfaces of said emitter such that said light source light passing through said phosphor cap passes through substantially the same amount of said conversion particles (for example, see Fig. 6).

Regarding claim 10, the phosphor loaded cap shown in figure 4 inherently includes a perforation for receiving an electrical contact to said light source since the wire (electrical contact) connects to the light source (1) through the cap (6).

Regarding claim 11, Rhee et al. teach the perforation is at least partially filled with at least one of conversion particles and scattering particles (for example, see paragraphs 53-55 and 104-105).

Regarding claim 12, the phosphor loaded cap (17) is formed separately from said light source (1) and bonded proximate to at least on of the surfaces of said light source (for example, see Fig. 3 and paragraph 93).

Regarding claim 13, the emitter comprises a submount (8), said light source mounted to said submount and said conversion material region (4) mounted to said submount (8) (for example, see Fig. 4).

Regarding claim 14, the conversion material region is hemispheric shaped (when including the lens (29) as part of the conversion region as taught in paragraph 94) and said light source (1) is arranged to emit light toward the base of and through said conversion material region (4) (for example, see Fig. 3).

Regarding claim 15, Rhee et al. teach the light source comprising a light emitting diode (1).

Regarding claim 16, the emitter emits a spectrum of light that is a combination of said first and second spectrums of light (for example, see paragraphs 53-54).

Regarding claim 17, the conversion material region (4) is positioned in relation to said light source (1) such that there is a space between the two (see Fig. 3).

Regarding claim 32, Rhee et al. teach a method of fabricating an emitter, comprising: providing a light source (1); providing a separately formed, seemingly hemispheric conversion material region (4+29) (for example, see pargraphs 91 and 94) which includes conversion particles seemingly suggested to be distributed uniformly throughout said conversion material region(for example, see paragraph 25, which recites that it is possible to configure the conversion particles by means of an inhomogeneous particle distribution… the fact that it recites it is possible, and not required, seems to suggest that Rhee teaches the particles being homogenously distributed (uniformly distributed) throughout the conversion material region); and bonding said conversion material region proximate to said light source, said conversion material region being positioned so that at least some of the light emitted from said light source at different angles

flows through said conversion material region and through the substantially the same amount of conversion particles (for example, see Fig. 3 and paragraphs 24-25, 53-54, and 93).

As noted, above, Rhee seems to suggest that the conversion material region is uniformly distributed throughout the hemispheric conversion material region (4+29), but does not explicitly recite such conditions exist. Komoto et al. teach that several different distributions of the conversion particles can be used to produce uniform luminous light including a uniform distribution in a hemispheric conversion material region, a inhomogeneous distribution in a hemispheric conversion material region, and a conversion material coating having a uniform thickness located on the outside of a hemispheric transparent resin (for example, see Figs. 30A-30C). Komoto et al. teach that any of the configurations are suitable for providing a uniform luminous light (for example, see col. 24, line 12 - col. 25, line 7 and col. 25, lines 53-67). Komoto et al. teach that the uniform distribution of particles within the conversion material region provides a uniform luminous light, the uniformly distributed particles not only convert a portion of the first spectrum of light, but also act as a light scattering material (for example, see col. 24, line 62 – col. 25, line 3). Rhee et al. also mention the conversion particles acting as light scattering material uniformly mixing the first spectrum of light with the second spectrum light, such that the radiation radiated by the light source is efficiently attenuated. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably contemplate providing a uniform distribution of conversion particles within a hemispheric conversion material region since both references suggest that a inhomogeneous distribution is not needed to compensate for the light path, since the conversion particles act as scattering particles that efficiently attenuate the light, and since it easier to form than the conversion material having an inhomogeneous distribution to compensate for different light path

lengths, and has increased integrity compared to the coating located on the outside of the lens, since the conversion particles are embedded within the resin layer.

Regarding claim 33, Rhee et al. teach further including a step of providing a submount (8), said light source (1) being bonded to a first surface of said submount (8).

Regarding claim 34, the conversion particles are distributed throughout said conversion material region (4) so that said emitter emits light having a substantially uniform color distribution and/or a substantially uniform intensity. (for example, see paragraphs 53-54).

Regarding claim 35, the step of providing said conversion material region includes a step of providing a lens (29) which includes said hemispheric conversion material region (4) (for example, see paragraph 94).

Regarding claim 36, the step of bonding said conversion material region proximate to said light source includes a step of bonding said lens to one of said first surface and a second surface of said submount (8) (for example, see paragraphs 93-94).

Regarding claim 37, the step of providing said lens includes a step of providing a lens with an opening configured to allow said lens to at least partially surround said light source (1) (for example, see Fig. 5).

Regarding claim 38, the step of providing said submount (8) includes a step of providing one of a flat submount and a cup-shaped submount (see Fig. 3).

Regarding claim 39, the submount includes a cup-shaped submount with a third side configured to reflect at least a portion of the light re-emitted from said conversion material region (see Fig. 3).

Regarding claim 40, the step of providing said conversion material region includes a step of providing a phosphor loaded cap which includes said conversion material region having an

inside surface that is shaped (planar/flat) substantially the same as the outside surface of said light source (see Fig. 3, note that the transparent encapsulation (15) is considered part of the light source).

Regarding claim 41, the step of providing said phosphor loaded cap (4) includes a step of providing a phosphor loaded cap which is shaped to at least partially surround said light source (1) (see Fig. 3).

Regarding claim 42, the step of providing said phosphor loaded cap (6) inherently includes step of providing a phosphor loaded cap with a perforation for engaging a contact since the contact (wire (14)) is shown extending through the phosphor loaded cap shown in figure 4.

Regarding claim 43, a step of filling said perforation with at least one of conversion particles and scattering particles (for example, see paragraphs 53-55 and 104-105).

Regarding claim 44, Reeh et al. disclose an emitter, comprising: a light source (1) which emits a first spectrum of light; Rhee seems to suggest a hemispheric shaped lens element (4+29) (for example, see pargraphs 91 and 94) molded separately from said light source (1) and including conversion particles seemingly suggested to be distributed uniformly throughout said substantially hemispheric lens element (4+29) (for example, see paragraph 25, which recites that it is possible to configure the conversion particles by means of an inhomogeneous particle distribution… the fact that it recites it is possible, and not required, seems to suggest that Rhee teaches the particles being homogenously distributed (uniformly distributed) throughout the conversion material region), said lens element disposed proximate to said light source such that most of the light emitted from said source over the entire range of angles interacts with substantially equal amounts of said wavelength conversion material, wherein the light transmitted from said lens element into the ambient; wherein said emitter emits a second

spectrum of light having substantially uniform color and intensity distributions over the entire range of viewing angles (for example, see Fig. 3 and paragraphs 24-25 and 554).

As noted, above, Rhee seems to suggest that the conversion material region is uniformly distributed throughout the hemispheric conversion material region (4+29), but does not explicitly recite such conditions exist. Komoto et al. teach that several different distributions of the conversion particles can be used to produce uniform luminous light including a uniform distribution in a hemispheric conversion material region, a inhomogeneous distribution in a hemispheric conversion material region, and a conversion material coating having a uniform thickness located on the outside of a hemispheric transparent resin (for example, see Figs. 30A-30C). Komoto et al. teach that any of the configurations are suitable for providing a uniform luminous light (for example, see col. 24, line 12 - col. 25, line 7 and col. 25, lines 53-67). Komoto et al. teach that the uniform distribution of particles within the substantially hemispheric lens element provides a uniform luminous light, the uniformly distributed particles not only convert a portion of the first spectrum of light, but also act as a light scattering material (for example, see col. 24, line 62 – col. 25, line 3). Rhee et al. also mention the conversion particles acting as light scattering material uniformly mixing the first spectrum of light with the second spectrum light, such that the radiation radiated by the light source is efficiently attenuated. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably contemplate providing a uniform distribution of conversion particles within a hemispheric conversion material region since both references suggest that a inhomogeneous distribution is not needed to compensate for the light path, since the conversion particles act as scattering particles that efficiently attenuate the light, and since it easier to form than the conversion material having an inhomogeneous distribution to compensate for different

light path lengths, and has increased integrity compared to the coating located on the outside of the lens, since the conversion particles are embedded within the resin layer.

Regarding claim 45, the wavelength conversion material comprises phosphor conversion particles (for example, see paragraphs 33-35).

Regarding claim 46, the first spectrum comprises blue light and said second spectrum comprises blue and yellow light such that said second spectrum appears white to the human eye (for example, see paragraph 25).

Regarding claim 47, the lens element further comprising a perforation large enough to accommodate an electrical connection (14) to said light source through said lens element (for example, see Fig. 6).

Regarding claim 48, the perforation is at least partially filled with said wavelength conversion material (for example, see paragraphs 53-55 and 104-105).

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is **(571) 272-2459**. The examiner can normally be reached between the hours of 12:00PM to 6:00PM Monday thru Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. **The fax phone number for this Group is (571) 273-8300.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Anthony Perry/

Anthony Perry
Patent Examiner
Art Unit 2879

/NIMESHKUMAR D. PATEL/
Supervisory Patent Examiner, Art Unit 2879